

Observations of the Transit of Venus at Luxor, Egypt.

By Vice-Admiral Ommanney, C.B., F.R.S., and
Colonel A. C. Campbell.

Admiral Ommanney, in a letter addressed to E. Dunkin, Esq., Hon. Secretary, dated as under, writes :

"I am glad to tell you that, by a fortunate circumstance, I have had the good fortune to share in observing the transit. At Cairo I became associated with Professor Auwers, of Berlin, and Dr. Döllen of St. Petersburg, who kindly allowed me to share in their expedition. We reached this station a fortnight previously to the transit, where we found Captain Abney and Colonel Campbell already established, with their observatories set up on an island south of Luxor, well situated for the object. As everything connected with the great phenomenon will interest you, I will now briefly inform you of the occurrence as it passed off with us. With regard to the conditions of weather and atmosphere, everything was as favourable for making the observations as could be desired. The Sun rose at 6^h 40^m A.M. local time, with great brilliancy and clearness, so common in Egypt, but on this occasion it was the clearest morning of any we had experienced since our arrival; not a cloud to be seen, and the Nile as smooth as a mirror.

"At the first glance it was a joyous sensation to see the dark orb of *Venus* on the disk of the Sun in her predicted place, making her way rapidly across towards the point of egress, more than three-quarters of her transit having apparently been accomplished. Prof. Auwers had provided me with a telescope and chronometer; in all we were six observers. Captain Abney observed with the photoheliograph, and Colonel A. Campbell with a very fine telescope belonging to Mr. Spottiswoode. Mrs. Campbell was provided with a good telescope, and she acquitted herself most creditably and zealously in the work. Profs. Auwers and Döllen each had a telescope, and previously to the contact the former took measurements of *Venus* with a heliometer. Everyone had gone through the constant practice with models night and day, so we may anticipate that the combined observations from this station will be valuable.

"Each observer was at his station at sunrise, silence was observed, and the intense interest we felt during the brief period of observation you can easily imagine. At first the outline of *Venus* was rather jagged, owing to vibration of the atmosphere, but as the altitude increased this disappeared, and towards internal contact, both the edge of *Venus* and the outline of the Sun's limb, as well as at the moment of contact, the definition was remarkably clear; but although I watched with all possible attention, I could not detect the appearance of a black-drop. Immediately after the internal contact for egress, however, a remarkable phenomenon presented itself: that portion of *Venus*

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which had emerged from the Sun's limb became illuminated with a white border, which light continued on the edge of the cusp of *Venus*, with great clearness, until the time when a half of the planet had crossed the Sun's limb; then the light diminished and disappeared about seven minutes before the last external contact.

"The precise moment of last external contact was, to my mind, the more difficult to define. I will now give you the local mean time by my observation, after applying the correction for the error of chronometer.

	h	m	s
Last internal contact at egress	20	16	5·6
Last external contact at egress	20	44	28·1
Difference	<hr/>	28	22·5

"On our comparing notes, the professional astronomers consider that our discrepancies are quite within reasonable bounds. My companions, Prof. Auwers and Dr. Döllen, will make their reports to their own authorities before letting anyone else see them, so I cannot give you their results. They have obtained a great many observations for fixing their position. You will have a very valuable record of the transit from the Sun-pictures obtained at every two minutes interval during the transit, and also from several taken by Janssen's plates."

Luxor, Egypt,
1874, December 12.

Colonel Campbell, in a letter addressed to Mr. Browning, dated as under, writes :

"Now that the Transit is over, I can write a few lines. I must say that we were most wonderfully fortunate; the morning was perfection, and everything was in the most perfect order :

" I made contact internal at 8^h 16^m 10^s.6.

" Hon. Mrs. Campbell 8^h 16^m 9^s.5.

" Mr. Auwers (from Berlin) 8^h 16^m 9^s.7.

" The Solar time 2^h 10^m 45^s.

" Mrs. Campbell has always been 5^s before me.

" With the model Dr. Döllen was put out by a light which appeared on the leading edge of *Venus* just before contact a silver thread; but I saw at once that it was not the light of the Sun, more like the Moon: we thus regarded it. There was no black-drop proper, only a very faint shadow, and a few interference lines. *Venus* was visible till half her diameter was over the Sun, surrounded by this faint silver light. 14 minutes after contact there was like a bit bitten out of a biscuit, and at 8^h 44^m 41^s.6 last external contact took place."

Thebes, 1874, Dec. 17.